

World's Smallest, Most Integrated, Multi-Frequency Products

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San Jose, CA 95131
U.S.A.**

www.discera.com

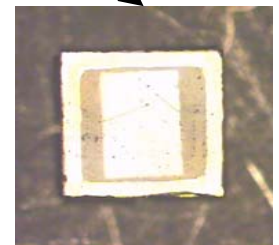
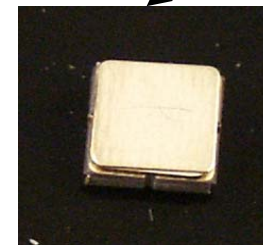
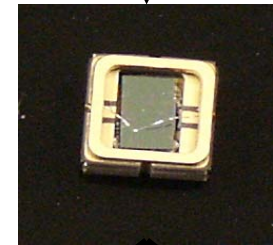
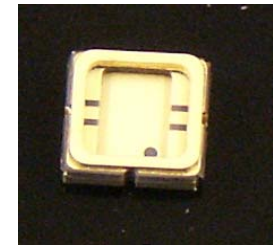
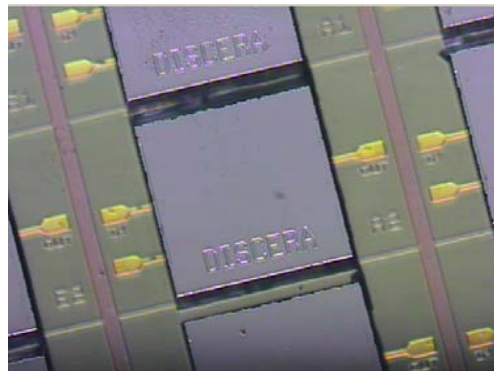
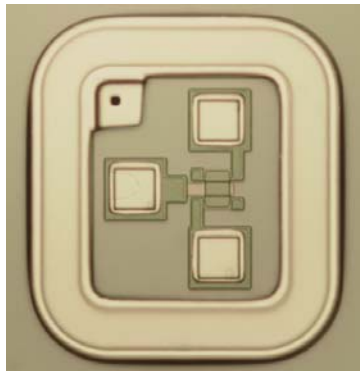
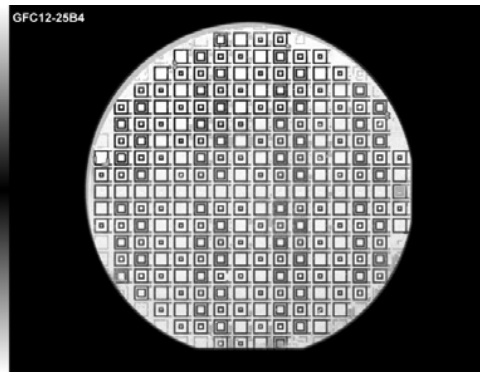
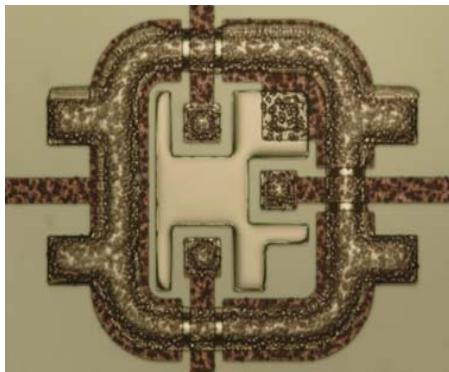
Discera Update

- **Discera**
 - Founded in 2001, based on MEMS work started in 1995
 - Twenty-six (26) US Patents
 - Transitioning from development to volume production
 - Management team has proven track record in MEMS technology, semiconductor processes, and IC products.
- **Investors: Ardesta, 3i, Partech, and Qualcomm Ventures.**

| | | |
|-------------------------|--------|---------------|
| • Initial Round | \$3.7M | April 2001 |
| • 2 nd Round | \$12M | February 2004 |
| • 3 rd Round | \$5+M | October 2005 |
- **Products – currently shipping to customers**
 - World smallest silicon programmable clocks
 - Covers widest frequency range (2 - 425MHz)
 - Excellent initial accuracy (+/- 0.2ppm)
 - Better temperature stability than XO (+/- 3ppm)
 - Large capacities from CMOS foundries

Technology for teaming: WLP

- AuSn seal vacuum ceramic package
- Glass frit wafer level vacuum packaging
→ less than 1 mTorr (resonator Q > 100k)
- Solder seal WLP with through wafer via

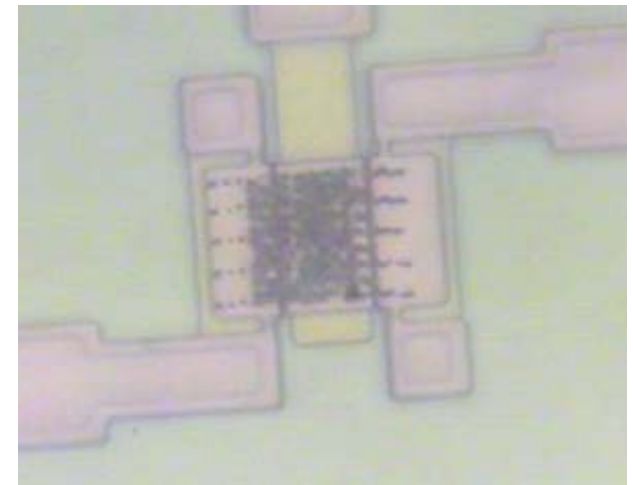
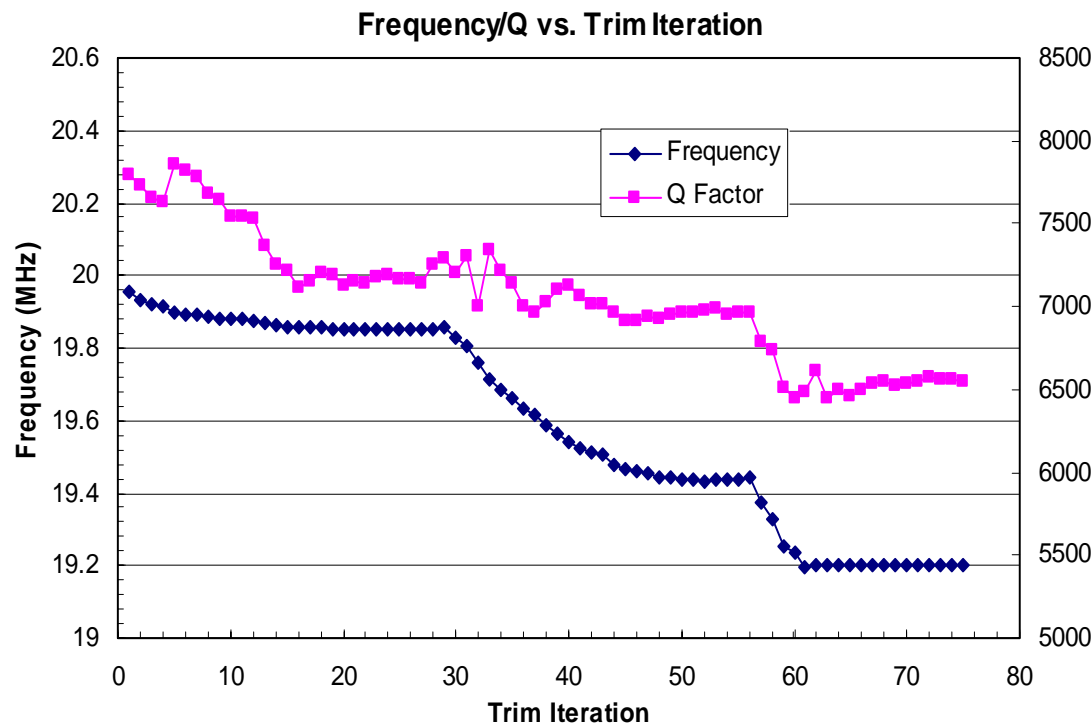
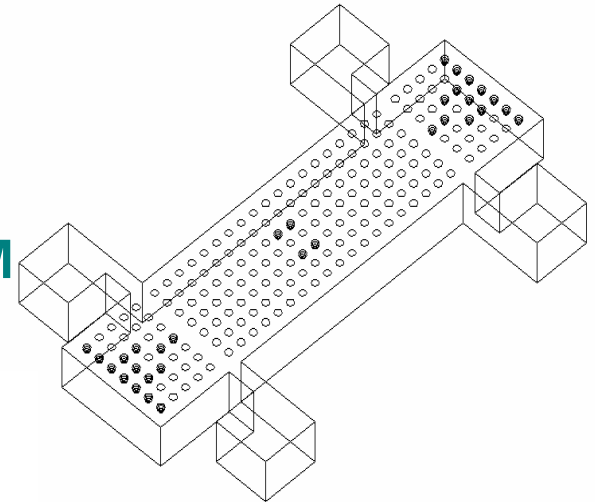


Metal Lid

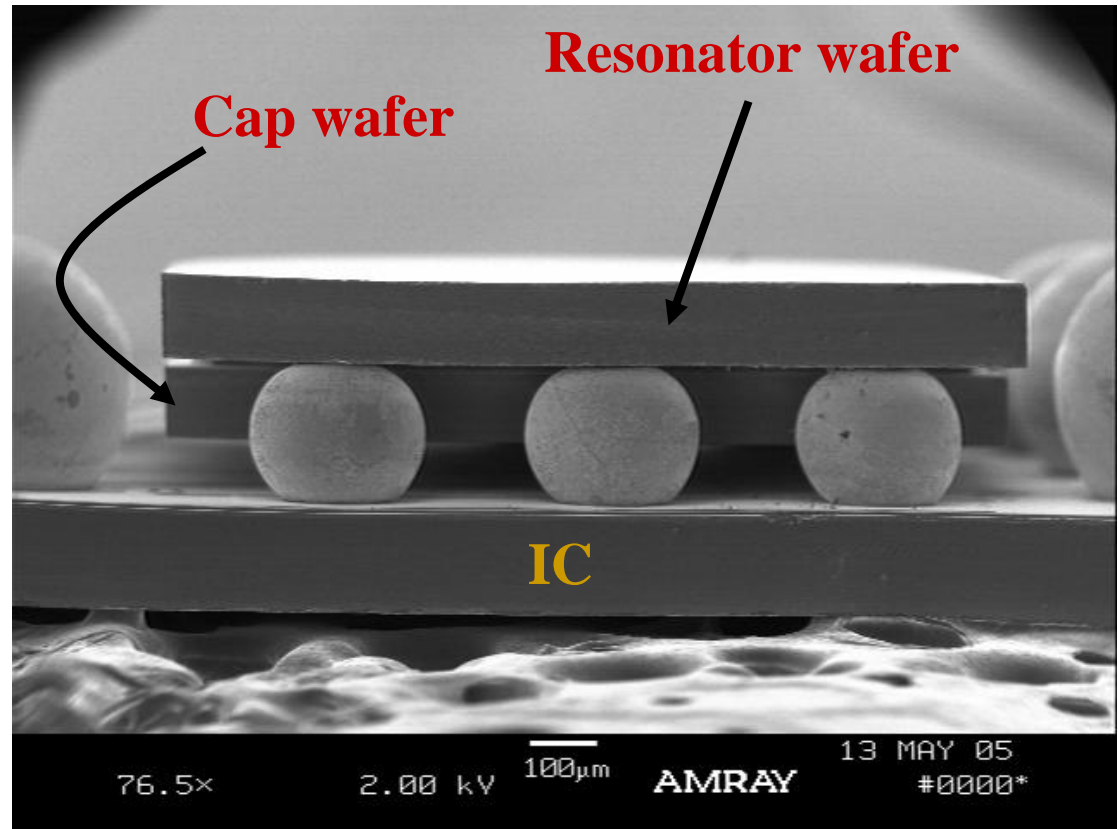
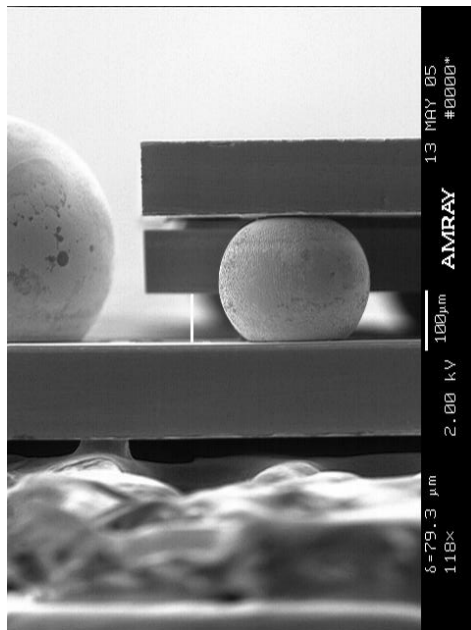
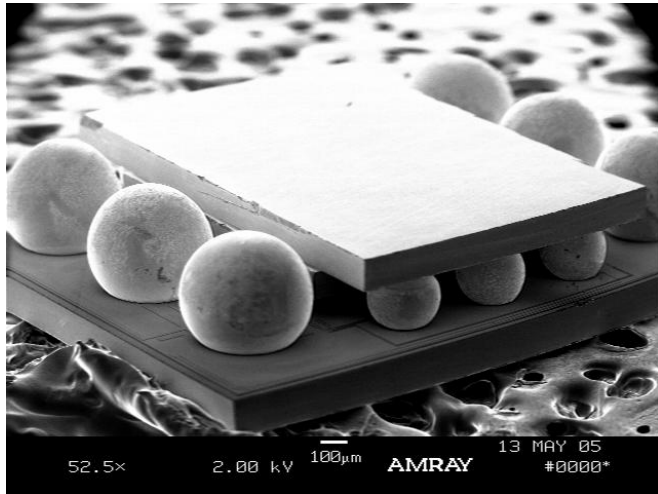
Glass Lid

Technology for teaming: Laser Trimming

- Femtosecond laser shoot through glass capped 3x3 ceramic package
- Achieved 2.5ppm frequency accuracy (Aug. 03) [21ppm was presented in IEDM 2004]



Technology for teaming: Chip Assembly



Summary

- **Discera's resonator technology**
 - Significant cost, size, and power reduction versus traditional technologies such as quartz
 - CMOS compatible processes
 - Aging stability: < 2ppm for the first year, < 5ppm for 10 years in real products at highest operation temperature
- **Technologies to offer for BAA 06-08**
 - Wafer level vacuum packaging
 - Laser Trimming
 - Assembly
- **Contact**

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The views, opinions, and/or findings contained in this article are those of the author and should not be interpreted as representing the official policies, either expressed or implied, of the Defense Advanced Research Projects Agency or the Department of Defense